

Statement of Work

I. Title: **Support for Developing CIRA2.0 Technical Report and Analyses**

Contractor Name: **Industrial Economics, Inc (IEc)**

Contract #: **IEc EP-D-14-032**

WA #: **2-22**

II. Work Assignment Manager (WAM): Jeremy Martinich
U.S. Environmental Protection Agency
Office of Atmospheric Programs
Climate Change Division (6207-A)
1200 Pennsylvania Ave, NW
Washington, DC 20460
(202) 343-9871
martinich.jeremy@epa.gov

III. Background:

The Climate Change Division (CCD) in the U.S. EPA's Office of Air and Radiation works to assess and address global climate change and the associated risks to human health and the environment. The CCD plays a key role in United States and international efforts to address climate change by:

- Implementing successful voluntary programs to reduce non-carbon dioxide (CO₂) emissions;
- Analyzing rigorously CO₂ and non-CO₂ greenhouse gas (GHG) emissions and economically efficient mitigation and adaptation options;
- Communicating climate analyses and strategies to policy-makers, experts and U.S. climate negotiators;
- Building effective international capacity to analyze and reduce GHG emissions and associated air pollution; and
- Educating the public on climate change.

CCD also has experience in assessing climate change vulnerability and integrating information on climate science, impacts, and adaptation into broader analytical frameworks. This Statement of Work (SOW) supports EPA in implementing activities that are required to fulfill the mission of the CCD.

Understanding the risks of the physical impacts and economic damages associated with different levels of future climate change is essential to informing policy decisions designed to address these risks. CCD has developed capacity through the Climate Change Impacts and Risk Analysis (CIRA) project to estimate the benefits to the U.S. of GHG mitigation. This effort focuses on assessing the degree to which global GHG mitigation may avoid or reduce climate change-related risks and damages across multiple U.S. sectors compared to a future with little to no mitigation. This multi-model framework, whose findings were summarized in a recent EPA report

(www.epa.gov/cira), enables development of consistent estimates of the benefits of climate change policy across these multiple impacts sectors. To continue advancing risk characterization and economic valuation of climate change impacts and GHG mitigation benefits, EPA is conducting a second phase of the CIRA modeling to produce a set of results that are intended to inform the development of the 2018 US Global Change Research Program's (USGCRP) Fourth National Climate Assessment (NCA4). This purpose of this work assignment is to support the development of information for NCA4, and to conduct other related analyses.

IV. Description and Tasks:

Task #1: Develop Workplan and Project Management

The Contactor shall provide a workplan outlining the approach, resources, timeline, and estimated costs for all tasks listed below. Estimates of costs and hours shall be presented by professional level and month. The WAM will review the workplan and will request revisions and or changes as needed. If necessary, the Contractor shall incorporate EPA comments into the final workplan.

The Contractor shall provide project management under this task. During the period of performance, the Contractor shall immediately inform the WAM, PO and CO by telephone and/or email of any problems that may impede performance along with any corrective actions needed by the EPA or the Contractor to solve the problem.

Under this task, the Contractor shall also attend a kick-off meeting via conference call to discuss the goals and strategy for completing future deliverables. This kick-off meeting will serve as a discussion to clarify the EPA's requirements, solicit ideas and feedback from the Contractor, as well as formulate ideas for work to be completed by the Contractor under the Tasks listed below.

Deliverables:

- Participate in Kick-off Meeting
- Workplan and cost estimate to EPA
- Monthly Status Reports

Task #2: Continued Support for Developing CIRA2.0 Technical Report

As described above, EPA is leading the development of a new round of sectoral modeling intended to inform NCA4. EPA and its collaborators are actively conducting new simulations using the scenarios and climate projections selected for CIRA2.0. The results of these modeling runs will be summarized in a technical report that will be published in Spring 2017, and serve as input to NCA4. The technical report will:

- a) Describe the objectives of CIRA2.0 modeling,
- b) Place the effort in context with other impacts/valuation literature,
- c) Describe selection and usage of the forcing, socioeconomic, and climate projections,
- d) Present results for each sectoral analysis (likely to be approximately 27 sectors),
- e) Briefly describe methods for each sector, with references to underlying literature, and

f) Summarize/synthesize results nationally (by sector), and for each NCA4 region.

Under Work Assignment #1-17 of this Contract (EP-D-14-032), the Contractor provided support to EPA for developing content for the technical report. This task serves as a follow-on to Task 1 of WA#1-17 to complete the work required by the Agency. This work involves supporting EPA in: 1) drafting content for the report, including development of text and figures/graphics for sector and synthesis sections, 2) formatting the document to provide visual appeal, 3) revising the report in response to comments from internal and external peer reviews, 4) preparing the final report for release (final layout and formatting), 5) preparing materials to support EPA in drafting content for NCA4, and 6) developing a basic webpage to host the new technical report upon release.

It is anticipated that by the end of option period 1, EPA and the Contractor will have completed draft content for approximately half of the 27 sectoral write-ups. Considerable progress on the introduction, inputs section, and appendices is also expected by then.

The Contractor shall perform the following activities in support of completing the technical report:

- Support EPA staff in drafting the remaining sectoral (approximately 14) sections of the report, including any appendices relating to these sections. Sections also in need of drafting include the national and regional scale sections.
- Develop graphical images, figures, and tables for the remaining sections of the report.
- Collate and organize all data underlying the sectoral analyses in the report, including the data used in the figures and tables of the report.
- Organize and prepare all references in standard formatting.
- Work with EPA in responding to comments from the internal and external reviewers by revising the content of the report. Please note that the Contractor shall not be responsible for, or involved in, the formal external peer review process. However, the Contractor shall be prepared to support EPA staff in developing a response to comments table (describing how the comments were addressed) that will become part of the peer review record for the report.
- Upon completion of internal and external reviews, the Contractor shall format and prepare a final version of the report for release.
- Support EPA in drafting content for a basic website that will host the final technical report when it is released. EPA envisions the current CIRA homepage (www.epa.gov/cira) being retrofitted to be a generic landing page for the CIRA project, therefore directing readers to a) a new subpage on the technical report (basic page, i.e., short description of report, links to PDFs) and b) the 2015 CIRA report (the existing content will remain the same). The Contractor shall note that it will not be responsible for building the Drupal page on the EPA site, and that a separate contract will be used to complete that work.

EPA staff are likely to be involved in the writing of NCA4, specifically CIRA2.0 content which is likely to end up in multiple chapters (most prominently in the Mitigation chapter, but also in regional chapters). The Contractor shall be prepared to provide modest support in assembling data as necessary to support these efforts. EPA anticipates that the technical report will provide most of the information needed for NCA4 drafting, however, this task will provide capacity to develop any information that is missing.

Task 2 Deliverables:

- Draft figures and sectoral sections of the report.
- Complete, formatted drafts of the report to begin internal and external reviews.
- Responses to comments table.
- Final version of report for release.
- Website content and PDF files.
- Additional data, figures, and information for use in NCA4 drafting.

Task #3: Updating CIRA Climate Impact Functions

Using sectoral modeling results from the first phase of the CIRA project, the Contractor (under Task #1-02 of contract #EP-D-14-031) supported EPA in developing climate impact functions for potential use in analyses of stylized scenarios. The method and results were written up in a manuscript that is currently in review, and the Contractor developed a spreadsheet tool for use by EPA staff in future analyses.

The purpose of this task is to update the climate impact functions using data from the CIRA2.0 sectoral modeling. For 25+ sectoral analyses, new simulations are in the process of being completed for 10 scenarios (2 RCPs times 5 climate models).¹ This new set of projections should provide a more robust set of information to build the impact functions.

Upon initiation of the work assignment, the Contractor shall begin organizing the sectoral modeling data that has already been delivered. Once all of the sectoral modeling simulations have been completed, the Contractor shall begin developing new regressions and impact functions. These functions and results, along with a description of any additional/new methods, shall be written up in a memo and provided to EPA. The Contractor shall also update the benefits estimator tool that it previously developed, and be ready to provide other summary materials for use in presentations as needed.

Task 3 Deliverables:

- Memo describing methods taken and new regression results.
- Updated benefits estimator tool.

Task #4: Technical Support and Quick Turnaround Assistance

As the above tasks proceed, EPA is likely to require technical support and quick turnaround assistance related to the work outlined in this SOW. The Contractor shall be expected to perform four of these technical support tasks, each requiring approximately 30-50 hours of work. As requested per technical direction from the WAM, the Contractor shall support EPA by:

- Providing background materials for presentations/briefings.

¹ With the exception of the CIRA2.0 air quality analysis, which is just being run with the CCSM4 climate model.

- Providing additional compilations of CIRA climate or sectoral impacts data for usage in other analyses.
- Paying open access publication fees for CIRA papers.
- Small technical analysis related to the subjects of this work assignment.
- Drafting and/or reviewing sectoral impacts summaries and communication products related to the CIRA report.

As stated above, this work will be initiated through technical direction, and these communications will include specific details regarding the work, including delivery dates.

Task 4 Deliverables:

- As described in technical direction from the WAM

V. Deliverables:

The Contractor shall adhere to the following schedule:

Task	Deliverable	Delivery Schedule
1	Kickoff call	Within 5 days of effective date of WA
1	Work plan	20 days after effective date of WA
1	Monthly status reports	TBD based on coordination with CO/WAM
2	Draft figures and sectoral sections	Rolling deadlines as results come in
2	Complete draft to begin internal review	By November 23 rd , 2016
2	Complete draft for external peer review	By January 1 st , 2017
2	Response to comments table	4 weeks after receipt of review comments
2	Final version of report for release	TBD, but likely around April 1 st , 2017
2	Final website content and files	TBD, but likely around April 1 st , 2017
2	Figures and data to support NCA4 drafting	TBD based on NCA4 schedule
3	Methods/results memo to EPA	By January 15 th , 2017
3	Updated benefits estimator tool	By January 31 st , 2017
4	Quick turnaround deliverables	TBD based on technical direction

VI. Reporting Requirements:

The Contractor shall provide monthly progress reports in accordance with the terms of the contract. The Contractor shall submit work products in electronic as well as hard copy form. In addition, the Contractor shall deliver to the WAM each draft and final report in electronic format that is readable by windows-based word-processing (Microsoft Word 2003), graphics (Microsoft PowerPoint 2003), spreadsheet (Excel 2003), and database (Access 2003) programs. The Contractor shall also provide electronic copies of reports in PDF format.

VII. QA Requirements:

The Contractor shall include a quality assurance section in the final technical report discussing the data used with respect to precision, accuracy, representativeness, comparability, completeness, sensitivity and appropriateness as it applies to this use and its source. The QA section will discuss how the Contractor and the Agency ensured that the environmental data were of acceptable quality and that they were being used for the purpose for which they were collected.